

REPLACED BY
ART 2.10.1

forming a first seating surface at a point of intersection between the first surface and the first drilling axis prior to (a).

5 12. The method of Claim 11 further comprising forming a second seating surface at a point of intersection between the second surface and the second drilling axis prior to (b).

13. The method of Claim 6 wherein drilling operations of (a) and (b) overlap in time.

10 14. The method of Claim 6 wherein (a) comprises supporting a first drill with a first drill bushing aligned with the first drilling axis to a position closely adjacent to the first surface.

15. The method of Claim 14 wherein (b) comprises supporting a second drill with a second drill bushing aligned with the second drilling axis to a position closely adjacent to the second surface.

15 16. A system for machining a torque-transmitting tool, said tool comprising a shank, an out-of-round drive portion, and a shoulder therebetween, said system comprising:
at least one machine tool; and
a fixture selectively positioned with respect to each machine tool, said fixture comprising at least one sensing element configured to sense the shoulder to register the tool with respect to the fixture and each machine tool.
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17. The system of Claim 16 wherein the fixture further comprises an out-of-round opening configured to receive the drive portion

25 18. A system for machining a diagonal bore in a drive stud of a torque-transmitting tool, said tool comprising a longitudinal axis and first and second surfaces on different sides of the longitudinal axis, said system comprising:

a fixture configured to hold the tool in a selected position;

a first drill oriented with respect to the fixture when in an operative position to drill a first bore in the tool from the first surface along a first drilling axis, said first drilling axis intersecting the first surface at a first oblique angle;

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a second drill oriented with respect to the fixture when in an operative position to drill a second bore in the tool from the second surface along a second drilling axis, said second drilling axis intersecting the second surface at a second oblique angle, said first and second drilling axes oriented such that the first and second bores meet in the tool.

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19. The invention of Claim 18 wherein the first and second surfaces are parallel to one another.

20. The method of Claim 18 wherein the first and second bores meet at a shoulder in the tool.

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21. The method of Claim 18 or 20 wherein the first and second drilling axes are substantially co-linear.

22. The method of Claim 21 wherein the first bore is larger in diameter than the second bore.

23. The method of Claim 18 wherein the first and second oblique angles are substantially equal to one another.

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24. The invention of Claim 18 further comprising:
a first mill oriented with respect to the fixture when in an operative position to form a first seating surface at a point of intersection between the first surface and the first drilling axis.

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25. The invention of Claim 24 further comprising:
a second mill oriented with respect to the fixture when in an operative position to form a second seating surface at a point of intersection between the second surface and the second drilling axis.

26. The invention of Claim 18 wherein the tool comprises a shank and a shoulder between the shank and at least one surface of the drive stud, and wherein the fixture is configured to engage the drive stud and to use the shoulder to register the tool with respect to the fixture and the drills.

5 27. The invention of Claim 18 wherein the fixture comprises a first drill bushing positioned closely adjacent the first surface and aligned with the first drilling axis to support the first drill.

10 28. The invention of Claim 27 wherein the fixture comprises a second drill bushing positioned closely adjacent the second surface and aligned with the second drilling axis to support the second drill.

29. The invention of Claim 27 wherein the first drill bushing comprises an oblique end substantially aligned with the first surface.

30. The invention of Claim 28, wherein the second drill bushing comprises an oblique end substantially aligned with the second surface.

15 31. A method for forming a diagonal bore in a torque-transmitting tool comprising a longitudinal axis and first and second surfaces on different sides of the longitudinal axis, said method comprising:

20 (a) drilling a first bore in the tool from the first surface along a first drilling axis, said first drilling axis intersecting the first surface at a first oblique angle; and

 (b) drilling a second, smaller bore in the tool from the first surface along the first drilling axis, said second bore forming with the first bore a step within the tool, said second bore passing through the second surface at a second oblique angle.

25 32. The method of Claim 31 wherein (a) comprises drilling the first bore in two drilling operations.

33. The method of Claim 32 wherein (a) comprises drilling the first bore with two separate drills in said two drilling operations.

34. The method of Claim 32 or 33 wherein at least part of the second, smaller bore of (b) is drilled between said two drilling operations.

35. The method of Claim 31 wherein (b) comprises drilling the second, smaller bore in two drilling operations.

5 36. The method of Claim 32 wherein (b) comprises drilling the second smaller bore with two separate drills in said two drilling operations.

37. A method for forming a diagonal bore in a torque-transmitting tool comprising a longitudinal axis and first and second surfaces on different sides of the longitudinal axis, said method comprising:

10 (a) forming a first part of a first, larger bore in the tool from the first surface along a first drilling axis, said first drilling axis intersecting the first surface at a first oblique angle;

(b) forming a first part of a second, smaller bore in the tool from the first surface along the first drilling axis;

15 (c) forming a second part of the first, larger bore in the tool from the first surface along the first drilling axis; and

(d) forming a second part of the second, smaller bore in the tool from the first surface along the first drilling axis, said second part of the second, smaller bore passing through the second surface at a second oblique angle.

20 38. The method of Claim 37 wherein different drills are used in (a) and (c) and different drills are used in (b) and (d).

39. The method of Claim 37 wherein (a) is performed before (c), wherein (b) is performed before (d), and wherein (a) is performed before (d).